

## Claims

What is claimed is:

1. A method of dynamically allocating a variable in a tracing framework, comprising:  
allocating a dynamic memory in the tracing framework having a plurality of data chunks;  
placing at least one of the plurality of data chunks onto a free list;  
allocating the at least one of the plurality of data chunks on the free list to store the variable and removing the at least one of the plurality of data chunks from the free list;  
deallocating the at least one of the plurality of data chunks and placing the at least one of the plurality of data chunks on a dirty list; and  
cleaning the at least one of the plurality of data chunks on the dirty list using a cleaning procedure to place the one of the plurality of data chunks on the free list.
2. The method of claim 1, further comprising:  
associating the dynamic memory with a consumer dynamic memory state.
3. The method of claim 2, further comprising:  
setting the consumer dynamic memory state after searching for at least one of the plurality of data chunks to allocate.
4. The method of claim 2, wherein the consumer dynamic memory state is set to empty if all of the plurality of data chunks are allocated.
5. The method of claim 2, wherein the consumer dynamic memory state is set to dirty if all of the plurality of data chunks are either allocated or on the dirty list.

6. The method of claim 2, wherein the consumer dynamic memory state is set to rinsing if all of the plurality of data chunks are either allocated or on a rinsing list.
7. The method of claim 2, wherein the consumer dynamic memory state is set to clean after executing a cleaning procedure.
8. The method of claim 7, wherein the cleaning procedure comprises:
  - moving one of the plurality of data chunks from the dirty list to a rinsing list if dirty list is not empty;
  - issuing a first cross-call;
  - moving one of the plurality of data chunks from the rinsing list to a clean list if the rinsing list is not empty upon receiving a response to the first cross-call;
  - issuing a second cross-call; and
  - setting the consumer dynamic memory state to clean a response to the second cross-call.
9. The method of claim 1, further comprising:
  - querying a clean list for one of the plurality of data chunks if the free list is empty;
  - and
  - moving one of the plurality of data chunks from the clean list to the free list if the clean list is not empty.
10. The method of claim 1, further comprising:
  - determining whether the variable has been previously allocated; and
  - not allocating the variable if the variable has been previously allocated.
11. The method of claim 1, wherein cleaning comprises:
  - moving one of the plurality of data chunks from the dirty list to the a rinsing list if dirty list is not empty;
  - issuing a first cross-call;

moving one of the plurality of data chunks from the rinsing list to a clean list if the rinsing list is not empty upon receiving a response to the first cross-call; issuing a second cross-call; and setting a consumer dynamic memory state to clean a response to the second cross-call.

12. The method of claim 1, wherein the dynamic memory is associated with a consumer.

13. The method of claim 1, wherein a size of the data chunk is static.

14. The method of claim 1, wherein the dynamic memory is indexed using a hash table.

15. A system for dynamically allocating a variable, comprising:

- a dynamic memory configured to store a plurality of data chunks;
- a consumer dynamic memory state associated with the dynamic memory configured to store a state of the state dynamic memory; and
- a tracing framework configured to allocate the variable to one of the plurality of data chunks using the consumer dynamic memory state.

16. The system of claim 15, wherein the tracing frame comprises:

- a free list configured to store at least one of the plurality of data chunks available for allocation; and
- a dirty list configured to store at least one of the plurality of data chunks that has been deallocated.

17. The system of claim 16, further comprising:

- a cleaner configured to move one of the plurality of data chunks on the dirty list to the free list using a cleaning procedure.

18. The system of claim 17, wherein the cleaning procedure comprises:

moving one of the plurality of data chunks from the dirty list to the a rinsing list if  
dirty list is not empty;  
issuing a first cross-call;  
moving one of the plurality of data chunks from the rinsing list to a clean list if the  
rinsing list is not empty upon receiving a response to the first cross-call;  
issuing a second cross-call; and  
setting the consumer dynamic memory state to clean a response to the second  
cross-call.

19. The system of claim 17, further comprising:  
a consumer configured to defining a probe and a corresponding an action
20. The system of claim 19, wherein the tracing framework is configured to dynamically  
allocate the variable in accordance with the action.
21. The system of claim 15, wherein the tracing framework is configured to set the  
consumer dynamic memory state after searching for at least one of the plurality of  
data chunks to allocate.
22. The system of claim 21, wherein the consumer dynamic memory state is set to empty  
if all of the plurality of data chunks are allocated.
23. The system of claim 21, wherein the consumer dynamic memory state is set to dirty if  
all of the plurality of data chunks are either allocated or on the dirty list.
24. The system of claim 21, wherein the consumer dynamic memory state is set to rinsing  
if all of the plurality of data chunks are either allocated or on a rinsing list.
25. The system of claim 21, wherein the consumer dynamic memory state is set to clean  
after executing a cleaning procedure.
26. The system of claim 15, wherein the dynamic memory is indexed using hash table.

27. A network system having a plurality of nodes, comprising:
- a dynamic memory configured to store a plurality of data chunks;
  - a consumer dynamic memory state associated with the dynamic memory configured to store a state of the state dynamic memory; and
  - a tracing framework configured to allocate the variable to one of the plurality of data chunks using the consumer dynamic memory state,
- wherein the dynamic memory executes on any node of the plurality of nodes,  
wherein the consumer dynamic memory state executes on any node of the plurality of nodes, and  
wherein the tracing framework executes on any node of the plurality of nodes.
28. The network system of claim 27, further comprising:
- a free list configured to store at least one of the plurality of data chunks available for allocation; and
  - a dirty list configured to store at least one of the plurality of data chunks that has been deallocated,
- wherein the free list executes on any node of the plurality of nodes, and  
wherein the dirty list executes on any node of the plurality of nodes.
29. The network system of claim 27, further comprising:
- a cleaner configured to move one of the plurality of data chunks on the dirty list to the free list using a cleaning procedure,
- wherein the cleaner executes on any node of the plurality of nodes.